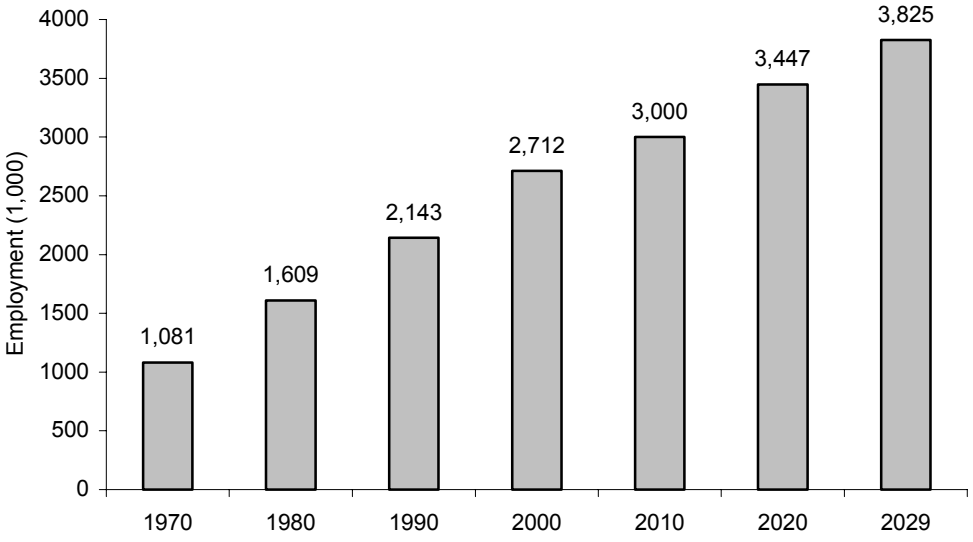
CHAPTER 3

Long-Term Forecast of Washington Wage and Salary Employment

IN 2003, THERE WERE 2.66 MILLION non-agricultural wage and salary jobs[1] in Washington State, about two-and-a-half times the state's employment level in 1970. Employment growth in the state averaged 2.8 percent per year between 1970 and 2003, far above the U.S. average annual rate of 1.8 percent during the same period.

Total Washington non-agricultural wage and salary employment is projected to reach 3.0 million in the year 2010 and 3.82 million by 2029 (Figure 3-1). This represents an average annual growth rate of 1.7 percent during the 2003-10 period, and 1.3 percent between 2010 and 2029. The forecast is reported in Table 3-1. Table 3-2 presents a more detailed, sector-by-sector forecast of wage and salary employment.

Figure 3-1
Washington Total Non-Agricultural Wage and Salary Employment



OFFICE OF FINANCIAL MANAGEMENT, Forecasting Division
EMPLOYMENT SECURITY DEPARTMENT, Labor Market and Economic Analysis Branch **APRIL 2004**

[1] The labor market terms used in this chapter have distinctive definitions: The **Labor Force** consists of the employed and the unemployed. It includes only non-institutionalized civilians 16 years of age and older. **Total Employment** is the number of employed persons by place of residence, including the self-employed and persons working in agricultural jobs. Total employment excludes non-civilian military personnel. The **Unemployed** represents the number of persons in a given month who are not working but are actively seeking work, as indicated by unemployment insurance claims and responses to the Current Population Survey. **Non-Agricultural Wage and Salary Employment** describes the number of jobs by place of work in non-agricultural industries in a given month reported by firms in the monthly Current Employment Statistics industry survey. The survey data are then extrapolated to produce an estimate of total industry employment. Non-agricultural wage and salary employment was about 89 percent of total employment in 1995.

Table 3-1
Washington Labor Force and Employment

Year	Labor Force	Total Employed	Unemployed	Unemployment Rate (%)	Total Non-Agricultural Wage & Salary Employment
1970	1,417,100	1,285,900	131,200	9.3	1,080,500
1975	1,562,200	1,412,300	149,800	9.6	1,225,500
1980	1,984,600	1,828,200	156,400	7.9	1,609,000
1981	1,996,800	1,806,000	190,800	9.6	1,612,000
1982	2,024,500	1,778,900	245,600	12.1	1,568,800
1983	2,068,400	1,837,700	230,700	11.2	1,586,000
1984	2,050,400	1,856,900	193,500	9.4	1,659,700
1985	2,090,400	1,920,700	169,700	8.1	1,710,300
1986	2,198,500	2,017,800	180,700	8.2	1,769,900
1987	2,257,500	2,086,800	170,700	7.6	1,851,500
1988	2,315,800	2,172,800	143,000	6.2	1,941,100
1989	2,450,900	2,299,600	151,300	6.2	2,046,300
1990	2,538,100	2,412,900	125,200	4.9	2,142,900
1991	2,535,100	2,373,200	161,900	6.4	2,177,400
1992	2,649,800	2,448,800	201,000	7.6	2,222,300
1993	2,701,000	2,495,000	206,000	7.6	2,256,900
1994	2,706,500	2,532,800	173,700	6.4	2,304,100
1995	2,804,400	2,625,900	178,500	6.4	2,346,900
1996	2,873,900	2,687,100	186,800	6.5	2,415,500
1997	2,983,300	2,841,100	142,200	4.8	2,514,100
1998	3,037,900	2,893,300	144,600	4.8	2,594,700
1999	3,074,700	2,929,300	145,400	4.7	2,648,500
2000	3,050,700	2,891,500	159,200	5.2	2,711,500
2001	3,015,200	2,822,300	192,900	6.4	2,697,400
2002	3,096,900	2,871,000	225,900	7.3	2,653,200
2003	3,116,500	2,891,700	224,800	7.2	2,658,300
Forecast					
2005	3,222,100	3,016,700	205,400	6.4	2,764,400
2010	3,464,000	3,276,400	187,600	5.4	2,999,500
2015	3,654,600	3,467,900	186,700	5.1	3,222,300
2020	3,811,100	3,627,400	183,700	4.8	3,446,800
2029	4,099,300	3,921,300	178,000	4.3	3,824,900
Change					
1970-1980	567,500	542,300	---	---	528,500
1980-1990	553,500	584,700	---	---	533,900
1990-2000	512,600	478,600	---	---	568,600
2000-2010	413,300	384,900	---	---	288,000
2010-2029	635,300	644,900	---	---	825,400
Growth Rates					
1970-1980	3.4%	3.6%	---	---	4.1%
1980-1990	2.5%	2.8%	---	---	2.9%
1990-2000	1.9%	1.8%	---	---	2.4%
2000-2010	1.3%	1.3%	---	---	1.0%
2010-2029	0.9%	1.0%	---	---	1.3%

Long-Term Employment Trends

Three important elements contribute to the forecast of long-term employment growth. First is growth of the indigenous labor force through births, deaths, and aging. Second is the long-term level of unemployment. And third is the change in the size of the available labor force due to net migration (the difference between workers leaving and entering the state). Growth of the labor force due to net migration, in turn, depends heavily on the strength of the state economy relative to other parts of the country. The long-term labor force forecast in Chapter 2 of this report takes into account all these three elements. Based on these considerations, the Washington labor force is forecasted to increase by about 982,800, or 1.1 percent annually, between 2003 and 2029.

At any given time, a portion of the labor force is unemployed. Since 1970, the Washington unemployment rate has ranged from a low of 4.7 percent in 1999 to a high of 12.1 percent in 1982. For the most part, changes in Washington's unemployment rate over time have tracked closely with the national business cycles, but at a level about 1 to 2 percentage points above the national average.

The unemployment rate in Washington has been about 2 to 4 percentage points above the U.S. rate during most economic downturns, but much closer to the U.S. rate during recoveries and expansions. Over the last ten years, however, the gap between Washington's and the U.S. unemployment rates has narrowed. In the 1990s, the Washington-U.S. difference averaged about 0.5 percentage point. The persistent gap between the U.S. and Washington unemployment rates reflects in part the relatively high concentration of seasonal jobs in the state. Also, large numbers of in-migrants were attracted to Washington during good economic times, they added to the state's labor pool and thus limited reductions in the state's unemployment rate.

The Washington economy experienced strong growth in the second half of the 1990s, leading to a state unemployment rate below 5 percent. Between 2003 and 2029, the state unemployment rate is forecasted to gradually decline from 7.2 percent to below the 5 percent level. This implies that the trends and factors contributing to the narrowing gap between the U.S. and Washington unemployment rates will continue. By 2029, there will be 3.92 million employed Washington residents, an increase of about 1.03 million employed persons, or 36 percent, from the 2003 level.

Goods-Producing Employment

Manufacturing will maintain its vital presence in the Washington economy over the next 25 years. The trend toward raising capital investment to enhance productivity growth, both in developed and developing countries, will assure a strong market for Washington's "high-tech" manufacturing products. However, some manufacturing sectors in the state, such as lumber and aluminum, are expected to decline as they face escalating production costs and intensifying national and international competition.

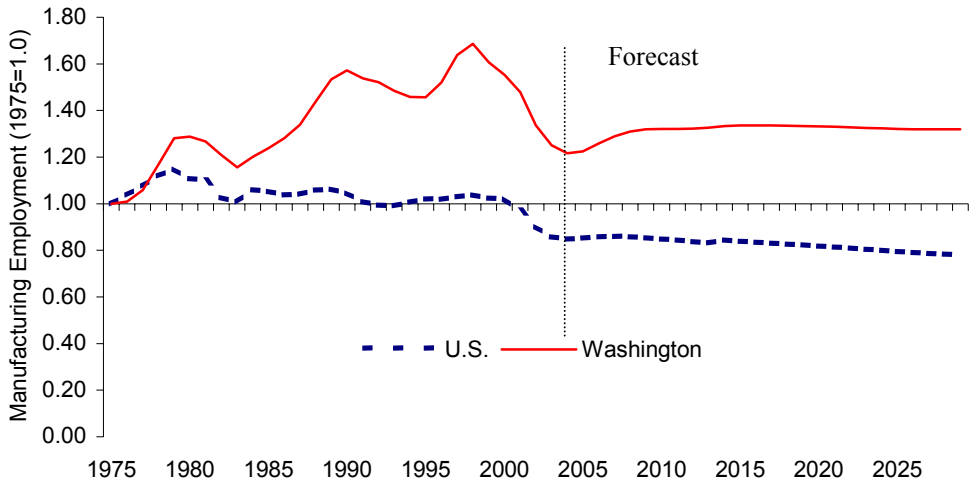
Table 3-2
Washington Non-Agricultural Wage and Salary Employment by Industry

Industry	Actuals			Forecast						Average Annual Growth Rates (%)			
	1990	1995	2000	2005	2010	2015	2020	2025	2029	1990-2000	2000-2010	2010-2020	2020-2029
Manufacturing	336,200	311,200	331,700	261,800	282,000	285,500	284,800	282,400	281,900	-0.1	-1.6	0.1	-0.1
Nondurable Manufacturing	90,200	98,800	95,300	77,600	79,300	81,300	82,800	83,600	84,200	0.6	-1.8	0.4	0.2
Foods	36,800	39,900	38,900	31,100	31,800	33,100	34,800	36,400	37,700	0.6	-2.0	0.9	0.9
Paper and Paper Products	16,500	15,700	14,400	12,300	12,300	12,100	12,000	11,800	11,600	-1.4	-1.6	-0.2	-0.4
Printing and Related Supports	11,000	12,700	11,600	8,100	8,100	7,800	7,300	6,800	6,400	0.5	-3.5	-1.0	-1.5
Petroleum&Coal/Plastics&Rubber Products	9,300	11,500	12,500	11,700	12,500	13,500	14,100	14,600	15,000	3.0	0.0	1.2	0.7
Other Non-Durables	16,600	19,000	17,900	14,400	14,600	14,800	14,600	14,000	13,500	0.8	-2.0	0.0	-0.9
Durable Manufacturing	246,000	212,400	236,400	184,200	202,700	204,200	202,000	198,800	197,700	-0.4	-1.5	0.0	-0.2
Wood Products	24,000	22,500	21,900	17,400	16,700	15,900	15,000	13,900	12,800	-0.9	-2.7	-1.1	-1.7
Nonmetallic Mineral Products	7,300	8,100	9,000	9,500	10,400	10,600	10,800	11,000	11,200	2.1	1.5	0.4	0.4
Primary Metals	12,700	11,100	10,900	5,400	4,500	3,900	3,300	2,600	2,200	-1.5	-8.5	-3.1	-4.4
Fabricated Metal Products	15,400	16,900	18,900	17,700	19,500	20,600	21,200	21,400	21,700	2.1	0.3	0.8	0.3
Machinery	11,700	12,500	15,600	13,600	15,700	16,300	16,200	15,800	15,400	2.9	0.1	0.3	-0.6
Computer And Electronic Products	29,100	27,500	34,300	23,500	22,400	23,300	25,900	29,800	34,400	1.7	-4.2	1.5	3.2
Electrical Equipment And Appliances	2,300	3,000	4,200	4,500	5,600	6,000	6,300	6,600	6,900	6.2	2.9	1.2	1.0
Aerospace Product And Parts	113,000	80,200	86,100	60,900	76,500	74,800	69,600	63,500	58,100	-2.7	-1.2	-0.9	-2.0
Other Transportation Equipment	13,200	12,800	13,400	12,300	11,300	11,000	10,500	9,800	9,600	0.2	-1.7	-0.7	-1.0
Other Durables	17,300	17,800	22,100	19,400	20,100	21,800	23,200	24,400	25,400	2.5	-0.9	1.4	1.0
Information	49,500	64,200	97,600	102,400	123,200	141,000	161,300	182,400	198,900	7.0	2.4	2.7	2.4
Newspaper/Periodical/Book/Directory Publishers	9,900	12,000	13,700	12,600	13,200	13,500	13,900	14,000	13,800	3.3	-0.4	0.5	-0.1
Software Publishers	7,300	17,800	32,200	44,600	62,100	77,600	96,200	117,300	135,300	16.0	6.8	4.5	3.9
Other Information Services	32,300	34,400	51,700	45,200	47,900	49,900	51,200	51,100	49,800	4.8	-0.8	0.7	-0.3
Professional and Business Services	197,500	233,700	303,800	327,400	376,300	444,100	496,000	553,900	619,100	4.4	2.2	2.8	2.5
Natural Resources and Mining	12,600	10,400	10,000	8,700	8,800	9,700	10,200	10,500	10,800	-2.3	-1.3	1.5	0.6
Construction	116,700	122,500	160,600	164,400	180,300	194,700	208,600	221,600	233,300	3.2	1.2	1.5	1.3
Wholesale Trade	101,400	109,200	121,300	121,500	129,800	137,400	146,400	153,800	160,300	1.8	0.7	1.2	1.0
Retail Trade	247,800	271,600	315,300	310,400	323,100	332,900	336,200	336,400	335,400	2.4	0.2	0.4	0.0
Transportation and Warehousing, Utilities	84,000	87,600	95,400	95,500	106,400	112,400	119,000	123,000	126,700	1.3	1.1	1.1	0.7
Financial Activities	113,100	121,700	142,300	158,300	163,500	160,500	160,200	157,000	155,300	2.3	1.4	-0.2	-0.3
Education and Health Services	206,300	251,800	291,900	327,700	352,100	378,900	411,900	437,500	453,400	3.5	1.9	1.6	1.1
Leisure and Hospitality	190,700	221,500	251,800	251,000	266,100	277,800	288,600	290,400	291,700	2.8	0.6	0.8	0.1
Other Services	89,600	97,000	106,200	101,500	113,800	119,300	135,200	148,700	162,400	1.7	0.7	1.7	2.1
State and Local Government	324,000	374,300	413,500	462,700	499,200	553,400	610,900	670,400	718,900	2.5	1.9	2.0	1.8
Federal Government	73,700	70,100	69,900	71,600	74,700	74,600	77,800	76,000	76,600	-0.5	0.7	0.4	-0.2
Private Goods Producing	348,800	321,600	341,700	270,500	290,800	295,200	295,000	292,900	292,700	-0.2	-1.6	0.1	-0.1
Private Services Producing	1,396,600	1,580,800	1,886,200	1,960,100	2,134,600	2,299,000	2,463,400	2,604,700	2,736,500	3.1	1.2	1.4	1.2
Total Non-Agr. Employment	2,143,100	2,346,800	2,711,300	2,764,900	2,999,300	3,222,200	3,447,100	3,644,000	3,824,700	2.4	1.0	1.4	1.2

Internal efficiencies and technological changes leading to productivity gains will hold manufacturing employment growth in check. Some of the productivity gains will result from increasing competition in a world economy; others will be dictated by necessity – the need to adapt to a slowdown in labor force growth and to the uncertainties in the supply of raw materials. In either case, the drive for greater efficiencies will constrain overall employment increases in goods producing sectors (Figure 3-2). Thus, manufacturing employment in Washington is expected to increase only slightly over the next 25 years – about 0.3 percent per year for a total gain of 20,100 jobs over the entire period. The national economy, in contrast, is expected to lose manufacturing jobs throughout the forecast period.

Washington is expected to share the national outlook for slower growth in population and employment in the future. But contrary to the projected reductions in the U.S., manufacturing employment in the state is expected to grow slightly over the next five years, as aerospace employment recovers modestly and as Washington's export-oriented capital equipment production benefits from the state's accessibility to rising Asian markets.

Figure 3-2
Manufacturing Employment Trends: Washington and U.S.



OFFICE OF FINANCIAL MANAGEMENT, Forecasting Division
EMPLOYMENT SECURITY DEPARTMENT, Labor Market and Economic Analysis Branch **APRIL 2004**

The need for continuing capital investments is expected to accelerate through the next decade. Accordingly, growth in computer and electronics, machinery and electrical equipment production will set the tempo for the expansion of Washington's manufacturing base. Aerospace employment has been in a down cycle, which began in the third quarter of 1998 and, after a pause in the first half of 2001, resumed job reductions. The current decline is expected to taper off, and a modest recovery is expected to begin in late 2004. Other manufacturing industries that are likely to experience employment reductions are wood products, paper and paper products, and primary metals.

Wood Products

Jobs in the manufacture of wood products (e.g., lumber, plywood, veneers, flooring) are expected to decline throughout the forecast period. This is a continuation of the long-term trend. In 1978, the wood products industry employed 32,000 workers. By 2003, employment had fallen to just under 18,000. Employment in the industry is projected to be less than 13,000 by 2029.

The structure of the industry has changed dramatically in the post-war period. As with other goods-producing sectors, greater worker productivity has been a major factor behind a shrinking lumber and wood products employment base. Increased mechanization and newer milling technology have decreased the number of workers needed for production.

Over the last decade a significant shift occurred on the supply side. In the late-1980s, policies corresponding to a heightened demand for environmental and wildlife protection effectively removed a sizable portion of the region's available stock of lumber from production. Federally owned forests, managed by the U.S. Forest Service and the Bureau of Land Management, were the focus of legal and regulatory efforts to comply with the Endangered Species Act. These measures were designed to protect the habitat of the Northern Spotted Owl, the Marbled Murlett, and various species of salmon. Consequently, timber sales from the federal lands in the state have declined substantially, raising the costs of raw material for local sawmills and planing mills.

It is expected that lumber and wood products employment will continue to be affected by environmental constraints throughout the forecast period. These pressures are likely to force accelerated investment in resource-saving (i.e., making more out of the same amount of raw material) and labor-saving technology. Higher material costs and competition from both Canadian lumber producers and alternative building materials (e.g., steel and composites) will bring about unrelenting efforts to improve internal production efficiencies. These factors all point to a constrained demand for labor.

Paper and Paper Products

Employment in paper and paper products declined from 16,500 in 1990 to 12,900 in 2003, and the decline is expected to continue with employment reaching 11,600 by 2029. The industry is highly capital-intensive, and the expected productivity gains will enable output to climb while employment declines.

Many of the same forces affecting lumber and wood products apply to the pulp and paper industry. Environmental laws have significantly affected the paper industry's production requirements, and limits in log harvesting and processing have affected the supply of raw materials. Indeed, these factors have contributed to several plant closures in the state during the past decade. To its advantage, the paper industry is somewhat more flexible than lumber in acquiring raw resources. Chips can be imported and recycled paper can be used. Many paper plants already process a significant amount of recycled materials.

A significant portion of the industry's production in Washington is exported. But rising competition from Asian and Canadian operators will dampen future growth of this industry in the state. On the other hand, environmental demands may result in accelerated investment in resource-saving and pollution abatement technologies. Adoption of these technologies will enhance the industry's viability in the region.

Aerospace

Aerospace employment in Washington increased 42 percent from 79,800 in December 1995 to 113,400 in July 1998. However, by the last quarter of 2003 industry employment had fallen 45 percent to 62,300. A modest rebound in aerospace employment is expected to begin in late 2004. In anticipation of stronger demand for commercial aircraft and Boeing's preparation to produce the new 7E7 aircraft, aerospace employment is expected to accelerate in fiscal years 2006 and 2007. However, growth for the remainder of the decade will be limited. New 7E7 work is expected to stabilize aerospace employment and offset job losses in other Boeing business lines. Including multiplier effects, new 7E7 work will help retain thousands of jobs, but it is not predicted to result in strong employment growth for the aerospace industry in the second half of the decade. In the longer term, employment levels are forecasted to resume their declining trend as productivity gains and use of the production capacity in other states and nations more than offset output growth. Pressures are mounting on cost control and on operating margins as Boeing competes head-on with Airbus Industries and other potential foreign producers.

Boeing had two major acquisitions in the 1990s. The first was the buyout of Rockwell International's aerospace and defense operations in 1996, and the second was a merger deal with McDonnell Douglas in 1997. Both significantly strengthen the company's defense and space businesses. In November 2000, Boeing created an Air Traffic Management Division, acting on the company's diversifying strategy to enhance business stability and growth. In September 2002, the company moved its corporate headquarters to Chicago.

The prospect for long-term demand is bright. Boeing predicts that world air traffic will grow at an average of 4.7 percent per year over the next two decades. The company envisions a worldwide demand of 23,500 new jets for the next 20 years, or 1,175 new planes per year. A third of the demand is expected to emanate from replacement aircrafts because of fuel inefficiency, excessive noise, or obsolescence. The remaining two thirds will be generated by new growth in air travel, particularly in the Asia-Pacific Rim area. A disproportionate amount of revenues will come from Asian carriers because of their growing demand for the more expensive two-aisle, long haul aircraft.

Prospects of aerospace employment in the state will be limited by several factors. One major factor is foreign competition, particularly from Airbus. In the medium to long term, potential competition may come from Russia and Japan. Even some Pacific Rim nations have been developing production capabilities of aircraft components and may present competition to the existing suppliers and subcontractors in Washington. The second factor is productivity and production costs. Facing the challenge of foreign competition, Boeing recognizes that it must keep improving its workers' productivity and lowering total production cost. Productivity gains

or shifting production to lower-cost non-Washington regions will adversely affect the employment prospect in the state. And, third, in order to gain new aircraft orders from foreign carriers, Boeing will likely continue to outsource certain components to manufacturers in the foreign carriers' home countries.

Other Transportation Equipment

Other than aerospace, Washington's transportation equipment industry consists of shipbuilding, boat building, and manufacturing of vehicles (primarily heavy trucks and trailers). Each segment of this industry faces very different market forces and prospects. Construction of the cross-Sound ferryboats in the past few years represented a major revenue source for the shipbuilding industry in the state. Repealing of the motor vehicle excise tax I-695 in 2001 threatens the shipyard jobs as it forces the state ferry system to curtail services and building of new vessels. Fortunately, spin-off projects from the Navy's Everett Homeport are generating substantial overhaul and maintenance work for local shipyards.

Luxury yachts and other pleasure craft have seen healthy business growth in the late 1990s and can be expected to move in tandem with the general economy. Sales of heavy trucks and trailers generally follow the prevailing economic and business conditions.

Primary Metals

Washington's primary metals industry is dominated by aluminum smelting and refining. The availability of cheap, abundant, and reliable electrical power that is essential in the electrolytic reduction process has long been a factor in siting aluminum plants in the region. Energy represents about 30 percent of aluminum production costs.

The region's aluminum producers enjoyed a distinct competitive advantage with respect to energy costs until a big electric rate increase in 1979. To remain competitive, the Bonneville Power Administration (BPA) agreed to tie power rate changes to the prevailing world price of finished aluminum and to participate in new plant and equipment investments to enhance overall operating efficiencies. This largely restored the industry's competitive position during the subsequent periods of high demand.

Several unsettling factors affected the picture in the early 1990s. World production exceeded demand and sales were maintained only by international agreement to address weakened market conditions. Russia possesses a significant aluminum production capacity. Prices fell precipitously in 1992-93 as the very weak ruble and the deteriorated domestic demand caused Russia to flood the world market with cheap aluminum ingots. Demand strengthened from 1994 to 1999, and some idled capacity was put back on line.

The price and availability of electricity will constrain future aluminum production in Washington. As the regional economy grows, aluminum producers will see more competition for electricity use from residential, commercial, and other manufacturing consumers. In an evolving regime of energy deregulation, the electricity rates in the state will approach parity with

those in other western states. The 2000-01 energy price hikes led to full or partial closings of all of Washington's smelters. Employment in primary metals declined from 10,900 in 2000 to 6,500 in 2002.

The situation has not improved significantly over the past two years. During 2003, of the 10 smelters in the Pacific Northwest, only two were operating, two had closed permanently, and two filed for bankruptcy. During 2004 another smelter, located in Montana, halted production because of rising power costs, leaving only one operating in the region. On a more positive note, Alcoa expects to restart operations at its Wenatchee smelter in 2005, recalling 400 employees to work. While aluminum plants remained idle here, production capacity has been increasing in other countries, especially China.

Trends in future energy and aluminum prices will determine how much of the region's idle capacity is eventually returned to production. Energy prices have remained relatively high. The BPA was able to reduce costs in 2004, and this allowed it to reduce wholesale power rates by 7.5 percent. Future prices are uncertain, however, since supplies will depend upon how much power is sent out of the region. Demand for aluminum has been strengthening, and aluminum prices have been increasing, in part due to power shortages in China that have curbed production there. Future demand is expected to be strong due to growing consumption of metals in China and increased use of aluminum in car and truck production.

Over the past decade-and-a-half the industry has made significant strides in increasing efficiencies and enhancing competitiveness. Demand for primary and fabricated metal should remain healthy, given the bullish outlook for both consumer and industrial durable products. But under the pressure of growing foreign competition and rising input costs, employment in the state is expected to decline. Employment in primary metals is forecast to decline form 5,600 in 2003 to 2,200 by 2029.

Computers, Electronics and Electrical Equipment

Washington's computer, electronics and electrical equipment sectors grew swiftly between 1975 and 2000. Combined employment in these sectors increased at a robust average annual pace of 4.8 percent during this period. The cyclical downturns in the computer and semiconductor industries were strongly felt in Washington, and employment in this sector declined during 2001 and 2002. Long-term prospects, however, are strong. In 2003, employment in the computer, electronics, and electrical equipment sectors was 27,400. It is forecasted to reach 41,300 by 2029, an increase of 51 percent.

Market adjustments in the semiconductor industry have brought about several restructurings in the past decade. But the demand for computer hardware is expected to remain strong throughout the forecast period. The need of businesses to increase productivity requires the application of computer technology and electronic devices as an integral part of the business process; and the use of computers in schools and homes has also become commonplace.

The state's prospects for attracting and retaining high-technology manufacturing are likely to remain positive, given the critical mass already in existence and the thrust of state and local

economic development efforts. Cases in point include the Intel research and development facility at DuPont and the WaferTek plant at Camas, which opened in 1997.

Food and Beverage Products

The diversity of Washington's food production is expected to continue. Major products in the state include frozen potatoes, apple juice, and processed seafood. In addition, roast coffee and coffee products are a growing segment. Increasing uses of mechanization, biotechnology, online telecommunication, global positioning systems, and remote sensing will characterize the changes in the industry's production and distribution processes over the long run. Employment in Washington's food processing sector is expected to rise moderately as the markets for the industry's products continue to expand, both domestically and overseas.

Crop production will drive the industry due to the importance of the state's fruit and vegetable harvests. Long-term prospects for processed fruits, vegetables, and specialty products look very strong. Some labor market and demographic trends are favorable to the demand for convenience foods: a growing number of households having two or more workers; more and more women working outside home; and elderly population (age 65 years and older) increasing at a rate more than twice that of the total population.

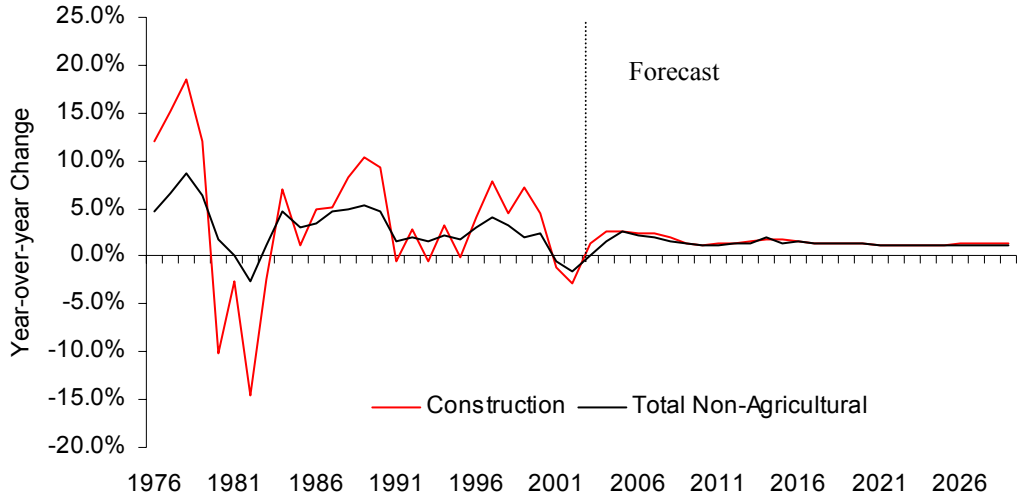
Foreign exports are assumed to constitute ever-larger proportions of total sales over the long run, for both fresh and processed products. Niche markets will play increasingly important roles, aided by the growing popularity of western style foods in the developing countries. The opening of economies in Asia to free trade will present additional opportunities for the expansion of export markets.

Construction

Historically, construction activity in the state has been very volatile. Short-term demand is sensitive to interest rates and the business cycle. In addition, large public works projects can exert a powerful short-term influence. In the long-term, however, the demand is primarily determined by construction costs, demographic changes, and employment growth. Population growth mainly affects the need for residential housing, whereas employment growth drives commercial buildings and non-building construction.

In spite of its many short-term ups and downs, the long-term average level of construction employment relative to total employment has been quite stable. Over the past 25 years, construction employment has been about 5.4 percent of total non-agricultural employment, with fluctuations occurring around this level during boom and bust periods. The lowest ratio of construction employment to total employment during the past 25 years was 4.7 percent, occurring on several occasions during economic slowdowns. The highest level of this ratio was 6.6 percent in 1979, when an economic boom was underway and the Washington Public Power Supply System had five nuclear power plants under construction. As of 2003, the construction industry accounted for 5.9 percent of total non-farm employment, or 156,300 jobs.

Figure 3-3
Relative Growth in Construction and Total Non-Agricultural Employment



OFFICE OF FINANCIAL MANAGEMENT, Forecasting Division
EMPLOYMENT SECURITY DEPARTMENT, Labor Market and Economic Analysis Branch **APRIL 2004**

Construction activity in the 1980s was brisk, spurred by a surging investment in commercial projects (i.e., office, industrial, and retail space) and the booming housing market in the second half of the decade. As a result, average growth in Washington construction employment increased to 2.4 percent per year over the decade. Construction employment again rose at a 2.3 percent annual rate between 1990 and 2003; growth was especially strong in the later half of the 1990s when rising personal income and low interest rates stimulated housing activities.

However, the high rate of growth in the 1990s will not be sustained in the long run. Throughout the forecast period population and employment growth is expected to gradually slow, suggesting that job growth associated with both the residential and non-residential construction will be more moderate. Some of the decline will be offset by rising incomes, which induce subsequent demand for more expensive housing and for remodeling. In addition, the prospects of low, stable long-term interest rates and inflation in the future would contribute to raising the levels of investment in residential and commercial buildings.

The future of the construction industry will also be shaped by technology changes – telecommunication, teleconferencing, home and mobile offices, telecommuting, Internet shopping, and inventory management. These factors will significantly influence both the quantity and the types of building space demanded.

Taking into account all the positive and negative factors affecting the industry's future, the forecast suggests that construction employment level is likely to retain its share of overall employment. Construction employment as a share of total non-agricultural wage and salary employment is expected to stay in the 6.0 percent range.

Service-Producing Employment

The relationship between goods-producing industries and service-producing sectors has changed substantially over the past 30 years. Increased productivity has slowed the pace of job growth in the goods-producing sectors, while heightened demand has accelerated job growth in consumer and business services, retail trade, and other non-manufacturing sectors. Also of note is that, over the past 15 years, there has been tremendous growth in professional and high-tech services employment in the state.

These trends are expected to continue (Table 3-3).

Professional and Business Services

Professional and business services has been one of the fastest growing sectors of the economy, and this is expected to continue during the forecast period.[2] The sector provides a wide range of service products—legal, accounting, engineering, computer systems design and programming, management, research and development. Employment in these services grew by an average 4.7 percent per year from 1975 to 2000. The sector suffered during the last economic downturn, but employment growth resumed in 2003. Employment in professional and business services is expected to grow an annual rate of just under 3 percent over the next 30 years; a slower rate than in the past, but still high relative to the rates forecasted for other sectors (Figure 3-4).

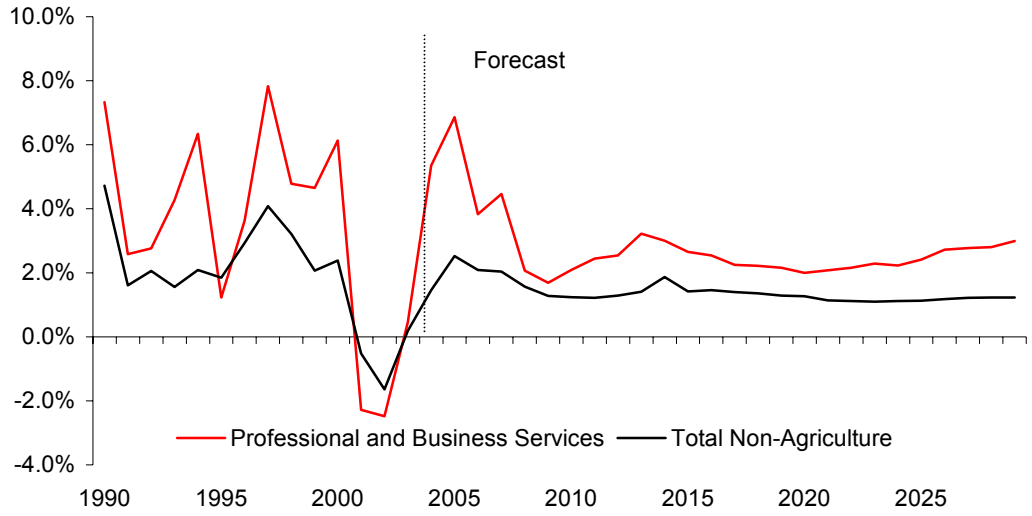
Business and professional services currently account for about 11 percent of all non-agricultural employment. By 2029, the sector's employment share will have grown to 16 percent. Growth in these services can be attributed to many factors, especially the trend toward increasing use of out-sourcing for some business operations. The ever-increasing complexity of the legal, human resource, marketing, and information technology fields has resulted in more and more firms out-sourcing these functions.

[2] Industries are classified in this report using the North American Industry Classification System (NAICS), which has replaced the Standard Industrial Classification (SIC) system. Earlier editions of this report used the SIC system.

Table 3-3
Share of Total Non-Agricultural Wage and Salary Employment by Industry

Industry	Actuals			Forecast					
	1990	1995	2000	2005	2010	2015	2020	2025	2029
Manufacturing	15.7%	13.3%	12.2%	9.5%	9.4%	8.9%	8.3%	7.7%	7.4%
Nondurable Manufacturing	4.2	4.2	3.5	2.8	2.6	2.5	2.4	2.3	2.2
Foods	1.7	1.7	1.4	1.1	1.1	1.0	1.0	1.0	1.0
Paper and Paper Products	0.8	0.7	0.5	0.4	0.4	0.4	0.3	0.3	0.3
Printing and Related Supports	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.2
Petroleum&Coal/Plastics&Rubber Products	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Other Non-Durables	0.8	0.8	0.7	0.5	0.5	0.5	0.4	0.4	0.4
Durable Manufacturing	11.5	9.1	8.7	6.7	6.8	6.3	5.9	5.5	5.2
Wood Products	1.1	1.0	0.8	0.6	0.6	0.5	0.4	0.4	0.3
Nonmetallic Mineral Products	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Primary Metals	0.6	0.5	0.4	0.2	0.2	0.1	0.1	0.1	0.1
Fabricated Metal Products	0.7	0.7	0.7	0.6	0.7	0.6	0.6	0.6	0.6
Machinery	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.4	0.4
Computer And Electronic Products	1.4	1.2	1.3	0.8	0.7	0.7	0.8	0.8	0.9
Electrical Equipment And Appliances	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Aerospace Product And Parts	5.3	3.4	3.2	2.2	2.6	2.3	2.0	1.7	1.5
Other Transportation Equipment	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3
Other Durables	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
Information	2.3	2.7	3.6	3.7	4.1	4.4	4.7	5.0	5.2
Newspaper/Periodical/Book/Directory Publis	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4
Software Publishers	0.3	0.8	1.2	1.6	2.1	2.4	2.8	3.2	3.5
Other Information Services	1.5	1.5	1.9	1.6	1.6	1.5	1.5	1.4	1.3
Professional and Business Services	9.2	10.0	11.2	11.8	12.5	13.8	14.4	15.2	16.2
Natural Resources and Mining	0.6	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Construction	5.4	5.2	5.9	5.9	6.0	6.0	6.1	6.1	6.1
Wholesale Trade	4.7	4.7	4.5	4.4	4.3	4.3	4.2	4.2	4.2
Retail Trade	11.6	11.6	11.6	11.2	10.8	10.3	9.8	9.2	8.8
Transportation and Warehousing, Utilities	3.9	3.7	3.5	3.5	3.5	3.5	3.5	3.4	3.3
Financial Activities	5.3	5.2	5.2	5.7	5.5	5.0	4.6	4.3	4.1
Education and Health Services	9.6	10.7	10.8	11.9	11.7	11.8	11.9	12.0	11.9
Leisure and Hospitality	8.9	9.4	9.3	9.1	8.9	8.6	8.4	8.0	7.6
Other Services	4.2	4.1	3.9	3.7	3.8	3.7	3.9	4.1	4.2
State and Local Government	15.1	15.9	15.3	16.7	16.6	17.2	17.7	18.4	18.8
Federal Government	3.4	3.0	2.6	2.6	2.5	2.3	2.3	2.1	2.0
Private Goods Producing	16.3	13.7	12.6	9.8	9.7	9.2	8.6	8.0	7.7
Private Services Producing	65.2	67.4	69.6	70.9	71.2	71.3	71.5	71.5	71.5
Total Non-Agr. Employment	100%	100%	100%	100%	100%	100%	100%	100%	100%

Figure 3-4
Employment Growth: Total Non-Agriculture and Professional and Business Services



OFFICE OF FINANCIAL MANAGEMENT, Forecasting Division
EMPLOYMENT SECURITY DEPARTMENT, Labor Market and Economic Analysis Branch **APRIL 2004**

Information

Government statisticians, recognizing the importance of information in the economy, created an "information" sector in the industrial classification system.[3] This sector includes software publishing, other publishing, telecommunications, Internet services, and broadcasting. Overall employment in the sector has risen strongly in recent years, increasing at an annual average rate of 4.4 percent from 1990 to 2003, and it is expected to continue to grow at an average rate of 3.0 percent a year to 2029. This strong performance is primarily due to the dramatic growth in the software industry. Employment growth in the other parts of the information sector has been more modest (2.1 percent a year on average) and is forecasted to increase more slowly in the future (0.5 percent a year over the forecast period).

The growth of the prepackaged software industry in the state has been phenomenal. A Washington company, Microsoft Corporation, is the largest firm in this industry. The company has been growing briskly, both domestically and in foreign markets. Although the same pace of growth will not last indefinitely, the company does plan to add as many qualified employees as they can find in the next few years. The rapid growth of high-wage jobs at Microsoft and other software development companies around the state has contributed to the growth as well as diversity of the state economy. Employment in software increased at an annual rate of 13.2

[3] The information sector is included in the North American Industry Classification System (NAICS). Under the former classification system, the Standard Industrial Classification (SIC), the relevant industries were dispersed throughout several sectors.

percent between 1990 and 2003. The average annual growth is forecasted to be 5.1 percent over the next 25 years, lower than over the past decade, but still substantial. Employment in the industry is expected to increase from its current level of about 36,800 to 135,300 in 2029.

Total employment in telecommunications, on the other hand, is not expected to grow substantially, due to the increasing use of advanced technologies. Technological advances have greatly increased capital intensity and labor productivity in this industry, making large output gains possible with a less corresponding increase in employment.

The telecommunications industry will see new products and services in the next decade. This occurs mainly as a result of the integration of voice, data, and video services through wired (copper, coaxial, or fiber optic cable) or wireless (radio waves, microwave, or satellites) networks. Almost every aspect of telecommunication services – local exchange, cellular and Internet telephony, broadband networks, and global information flows – will undergo paradigm shifts.

However, in the past few years the industry has invested heavily on building and expanding infrastructure. The "race" to be the first and fastest to build infrastructure in the absence of revenue generation and profitability has led to gross over-capacity, investor burnout, bankruptcies, and industry restructuring. It may take some time for the current unused capacity to be absorbed and then for the investment to revive.

Financial Activities

Historically, employment in finance, insurance, and real estate has grown slightly faster than total wage and salary employment, reflecting the growing population and rising real personal income. In the late 1980s and most of the 1990s, this trend was reversed due to the slowing population growth, overbuilding of commercial real estate, productivity improvements, mergers, and a shift toward electronic banking. Offsetting these negative factors were the booms in mortgage financing/refinancing and the expansion of financial services. The low and stable interest rates, accompanied by the prospering security markets, stimulated the growth in investment banking and brokerage businesses.

In the late 1990s, vigorous income growth and low mortgage interest rates stimulated real estate financing activities. Retrenchments and consolidations of the financial industry also abated. Financial activities were the only private industry that did not suffer employment decline in the 2001 recession, due mainly to the low interest rates and the soaring housing markets.

In the next two decades, aging of the population will raise the demand for financial services. This happens as the baby boom generation moves into the age cohorts that save a high proportion of their income, and as the elderly population with high assets ownership grow. After 2003, however, employment in financial activities will increase at a slower rate than in the past, and the sector's share of total employment is forecasted to decline slightly. Computerization, electronic data exchanges, and other advances will raise the industry's labor productivity. The productivity gains will to some extent offset the need for more workers when the demand for

financial services expands. Trends toward electronic banking, interstate banking, and the proliferation of smaller community banks are the uncertainty factors affecting job growth in these sectors.

Education and Health Services

Employment in health and education services grew rapidly (at an average annual rate of 4.5 percent) from 1975 to 2003. Employment growth in these sectors is expected to continue, though at a rate more similar to the average for all non-agricultural employment over the next 25 years. The sector's share of total employment is forecasted to remain at the 12 percent level.

Health services employment has experienced fast growth in the past; future growth, however, is expected to be only slightly above average. Historical increases in health services jobs reflect an increasing commitment of society's resources to health care. Future increases in the proportion of national income spent on health care depend on such factors as aging of the population, cost pressures, and development of advanced treatment procedures and new drugs.

Wholesale Trade

Although the major business of wholesalers is selling merchandise to retailers, wholesale trade employment has grown at a substantially slower rate than retail trade employment over the past 30 years. This reflects the adoption of productivity-enhancing technologies and improvements in business practices such as computerization, sophisticated inventory controls, and more efficient systems of distribution and delivery. Productivity and management improvements are expected to continue. Vertical integration in the past decade, as evidenced by the evolving warehouse/discount retailing, one-stop shopping, and specialty superstores has chipped away some employment growth in wholesale industry.

In 2003, wholesale trade employment in the state was 115,300; it is predicted that the industry employment will grow at an average annual rate of 1.3 percent during the next two-and-a-half decades (Figure 3-5).

Retail Trade

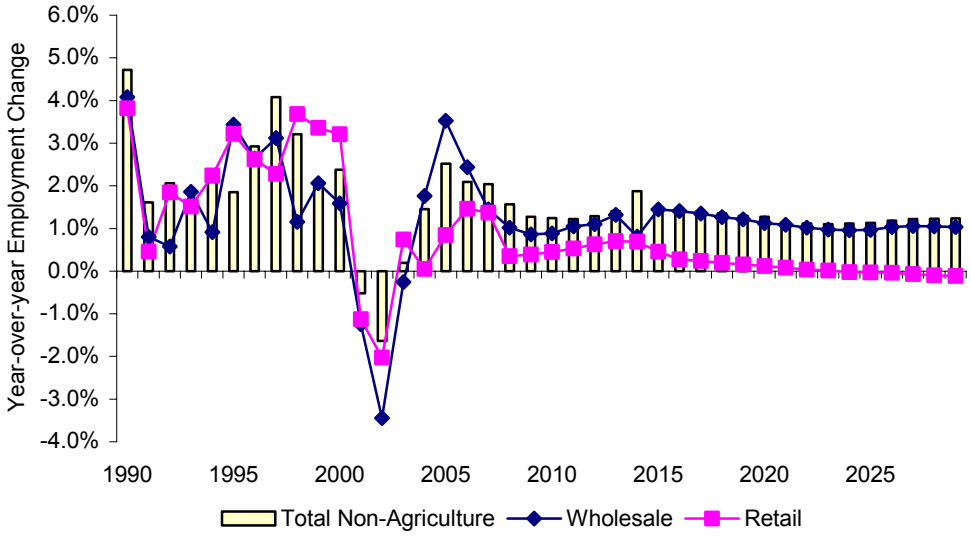
Employment in retail trade grew at an average annual rate of 3.1 percent between 1975 and 2003. Retail trade increased its share of the state total employment during the 1970s and 1980s, primarily reflecting increases in income and spending power. During the 1970s, growth of household income came from wage increases and rising female labor participation. In the 1980s, little or no growth of real wages occurred, but spending power still rose as a result of continued growth in the labor earnings of women. The sector's employment share has been stable (in the range of 11.6 percent) since 1990.[4]

[4] Note that under the North American Industry Classification System (NAICS) eating and drinking establishments are not included in retail trade, as was the case under the Standard Industrial Classification (SIC) system. Eating and drinking establishments are now recorded under Accommodation and Food Services.

One factor affecting the retail employment forecast is the expectation that increases in total personal income will be slower in the next 25 years than was the case between 1970 and 2003. In addition, since there are now already many women in the labor force, future increase in two-income households is expected to slow down. Other trends in retail trade will also act to constrain employment growth. Increasing worker productivity and economies of scale, as shown by warehouse-type superstores, will limit employment growth to some extent. Another uncertainty is the evolution of electronic shopping through the Internet. The effect of e-tailing is double-edged: it brings to Washington retailers, big and small, relatively easy access to national and even international markets; but at the same time it subjects local retailers to more competition from out-of-state retail operations. Amazon.com Incorporated, which is based in Washington, is an industry leader. The firm currently employees 7,800 workers and had gross revenues totaling $5.3 billion in 2003. General merchandise retailers probably will be more affected by the evolution of e-tailing than those emphasizing specialty goods and services.

Taking into account the factors discussed above, the forecast calls for retail trade employment to grow very slowly over the next twenty-five years (Figure 3-5). Consequently, retail trade's share of total wage and salary employment over the forecast years is expected to decline from its current level of 11.6 percent to 8.8 percent by 2029.

Figure 3-5
Relative Growth in Trade and Total Non-Agricultural Employment



OFFICE OF FINANCIAL MANAGEMENT, Forecasting Division
EMPLOYMENT SECURITY DEPARTMENT, Labor Market and Economic Analysis Branch **APRIL 2004**

State and Local Government

Education is a major function of state and local government. State and local government employment grew faster than total employment between 1958 and 1972, as the Baby Boom generation moved through the educational system. Growth in the primary school age (i.e., ages 5 to 17) population began to slow down in the second half of the 1990s; but the slowdown came at a time when growth in the college-age population (ages 17 to 22) started picking up. The increase in the college-age population will add to employment in higher education.

Several factors are working together to slow the growth of government employment. The first is passage of Initiative 601 in 1993, which ties the state government spending to the growth of total population and inflation. The second is a general sentiment across the nation that government has grown too large to be effectively managed, and thus the increasing practices of outsourcing government functions to private providers. Most of the growth in the combined "state and local government" sector is expected to occur on local government side. Overall, the proportion of total wage and salary employment represented by state and local government is expected to rise modestly over the next 25 years.

Federal Government

Federal government employment has declined as a percentage of total employment throughout the post-World War II era. This trend is expected to continue, although some areas of federal government activity, such as the postal service and park service, are expected to increase along with the population. In the past few years, base closures in other states transferred military personnel to Washington; these shifts helped offset declines in other parts of federal civilian employment.

Employment Diversity

In 1960, manufacturing and government accounted for almost half of Washington's wage and salary employment. Manufacturing employment at that time was dominated by aerospace employment and lumber and wood products employment. These two sectors together accounted for almost half of manufacturing jobs and close to 13 percent of total wage and salary employment in the state. Government, excluding the armed forces, employed more than 20 percent of total wage and salary workers in the state. A third of government employment in 1960 was federal civilian workers, basically reflecting the strength and size of national defense-related establishments in Washington at that time.

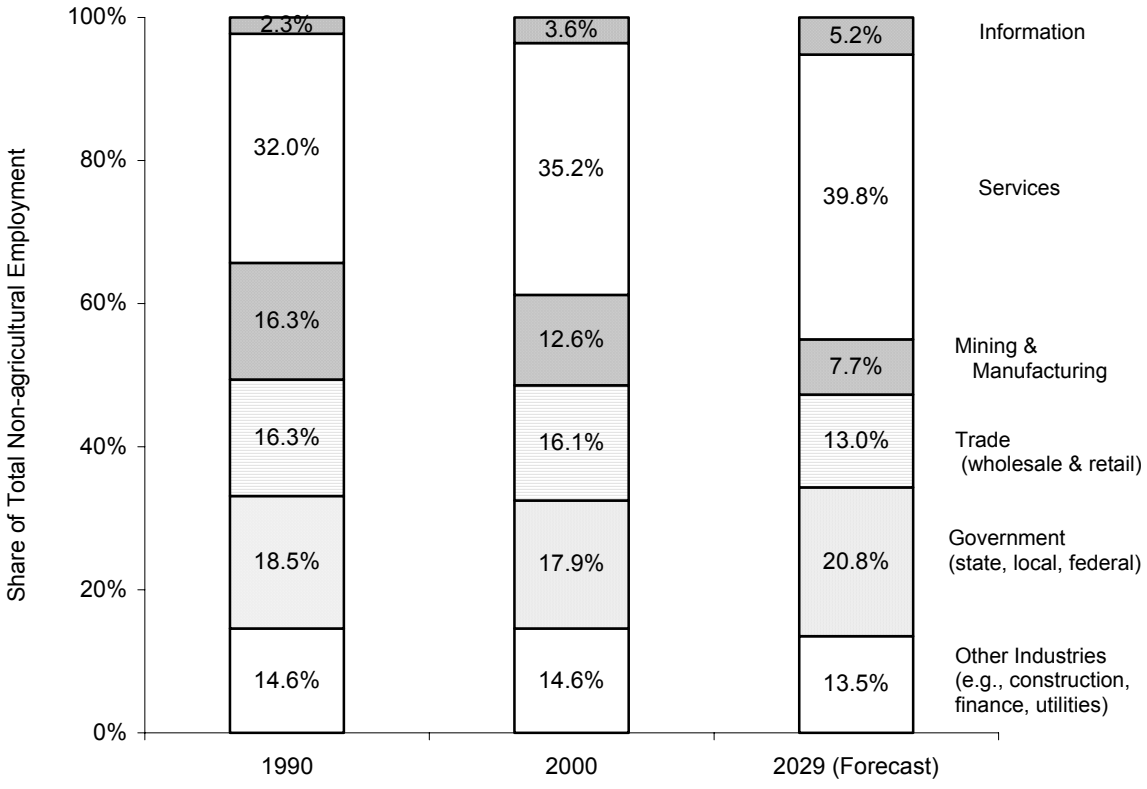
For decades, the overall state economy moved in concert with the changes in its military, aerospace, and timber industries. Booms and busts of these industries likely would induce the same condition in the overall state economy. However, this relationship has changed substantially. Government still accounted for 19.6 percent of total wage and salary employment in 2003; the shrinkage in federal government, particularly in defense, was somewhat offset by increases in state and local government employment. Aerospace and wood products industries now account for less than 5 percent of the state's non-farm employment. Manufacturing and

government constituted less than one-third of total non-agricultural employment in 2003, compared to about one-half in 1960.

Manufacturing employment in the state is projected to grow much more slowly than total employment in the next 25 years. As a result, the combined mining and manufacturing share of total non-agricultural employment is expected to decline to 7.7 percent by 2029 (Figure 3-6). The forecast calls for a reduction in the aerospace industry's share of total state employment to 1.5 percent by 2029.

The fastest growing sectors of the Washington economy have been information and services. This largely reflects technological changes and the shift in consumption from goods to services, nationwide. Growth in the information sector has been driven by increases in software publishing, and the fastest-growing service sector has been professional and business services (e.g., accounting, engineering, computer systems and programming). The information and service sectors are expected to continue to gain employment share throughout the forecast period. By 2029, they are projected to account for 45 percent of total wage and salary employment.

Figure 3-6
Distribution of Washington Employment by Industry



OFFICE OF FINANCIAL MANAGEMENT, Forecasting Division
EMPLOYMENT SECURITY DEPARTMENT, Labor Market and Economic Analysis Branch **APRIL 2004**